

UDC 634.0.323

**N. I. Zharkov**, PhD (Engineering), assistant professor (BSTU);  
**V. I. Gil**, PhD (Engineering) (BSTU); **V. S. Isacnenkov**, assistant lecturer (BSTU)

### ANALYSIS OF THE STRUCTURE OF WOOD CONVEYOR

One of the important types of work in the warehouses of raw timber companies is a sort of round timber. Transport and sorting of logs in the enterprises of the Republic of Belarus is carried out mainly by longitudinal sorting conveyors. Main indicators of the technical characteristics of these transporters do not meet the requirements of the Belarusian forestry enterprises in a number of parameters. Replacement of obsolete design and procurement of new equipment associated with considerable capital investment. An analysis of existing structures proposed scheme is an automated line to sort of round timber. A new scheme of arrangement will significantly reduce the length of the conveyor and the speed reduction will apply traction body drive lower power and lower the metal structure.

**Introduction.** Procurement and supply of wood in the Republic of Belarus is mainly a timber enterprises of the concern "Bellesbumprom" and some forestry. Harvested wood goes to the lower storage companies or directly to the consumer, which is the primary processing of wood. Belarus is currently dominated by lower stocks, with an annual turnover of 100 thousand m<sup>3</sup>. The volume of timber harvesting in forestry are in the range 22–177 thousand m<sup>3</sup> (mean volume of 93 thousand m<sup>3</sup>).

**Main part.** The technology works on the lower stock-based systems based on machine with a longitudinal feed whip (assortment) and individual treatment. The same technology is used and works in forestry. Transport and sorting of logs by longitudinal sorting conveyors.

In Belarus, sorting conveyors are not available. Most enterprises use acquired during the Soviet-type transporters of Б-22У-1 and TTC, as well as some automated sorting line conveyor based on JIT-86.

All longitudinal conveyors are made, usually horizontal, and one functional circuit [1].

The Table lists the main parameters of the technological characteristics of sorting carriers, and the previously produced at the present time in Russia. [2].

All of these transporters in the Table are automated, or amenable to automation.

Analyzing the performance specifications of conveyors should be noted that they do not meet

the requirements of Belarusian enterprises in some parameters. This is a high performance and high granularity sort.

Replacement of obsolete design and procurement of new equipment associated with considerable capital investment. The lack of harmonization and the principle of block-aggregate layout of process flow diagrams are not to create a unified series of equipment for grading of round timber.

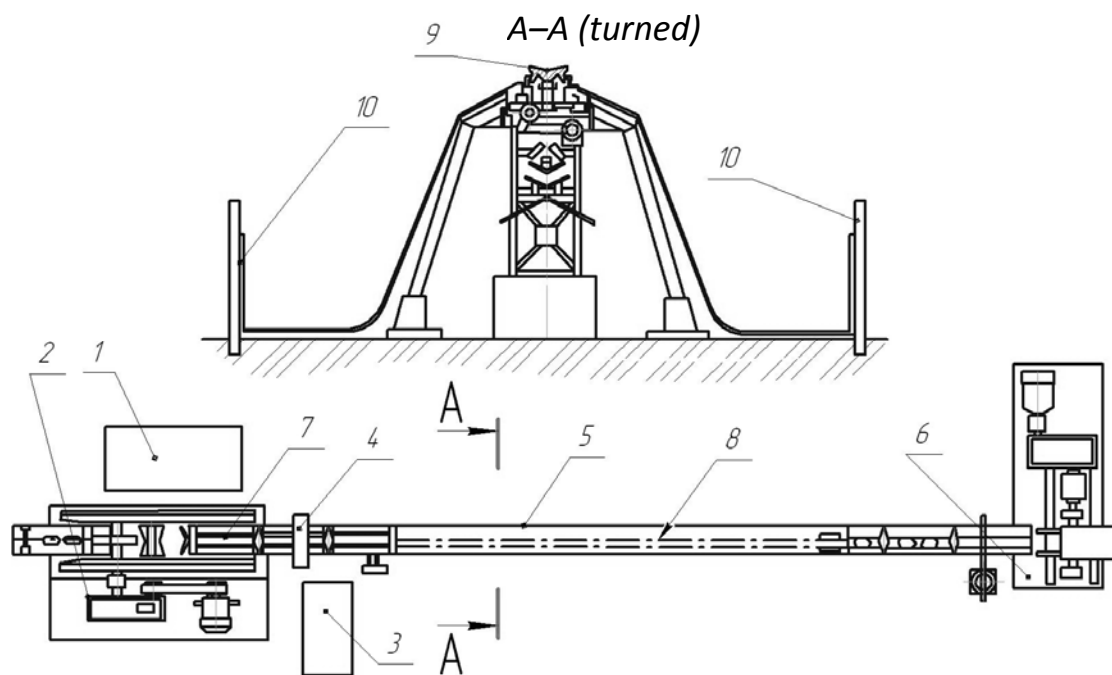
An analysis of existing designs to the following scheme of the automated line to sort of round timber, shown in Figure.

It includes: installation piece УИИЗ feed type (position 1), the receiving conveyor 2 (drawbar organ – Round-chain), the cab operator 3, the measuring device 4, lesotransporter 5, consisting of the actuator 6 and a traction device 7.

The conveyor consists of eight separate sections, each of which is a metal welded frame. Reinforced sections differ only in length, which depends on the length of the assortment, discharged section. Under the section joints are welded metal supports on concrete pads. As the body of the traction chain of eight selected folding trailer. On the gravity circuit installed scrapers nine double-acting (section A-A). Along the front of the conveyor on both its sides, opposite each section, installed drives 10. In each section 8 of the conveyor is equipped with two tilting mechanism to ensure sbrosku logs to the right or left side of the conveyor.

**The main parameters of sorting conveyors**

Data	TTC	Б-22У1	ЛТ44	ЛТ-1А	ЛТ86	ТС7	ЛТ-182	ЛТ-173
Length, m.	300	120	130	240	130	120	75	130
Body type of traction	cable		Round-chain		chain		fillet	
Speed, m / min	0.65	0.6	0.65–0.80	0.7	0.8–1.2	2.7	1.2	1.2
Motor power, kW	16	17	17	22	30–40	39	33	18
Drive drop logs	individual power	traction of the drive body			gravitational			electro-hydraulic
Productivity	–	340 m <sup>3</sup> per shift	–	–	–	340 m <sup>3</sup> per shift	87 m <sup>3</sup> per hour	70 m <sup>3</sup> per hour



Automated sorting line of round timber

**Conclusion.** The proposed scheme of automated sorting line of round timber based on a longitudinal conveyor, made by aggregate-block principle, can serve as a basis for developing technical specifications for the design.

#### References

1. Строительное дорожное и коммунальное машиностроение. Сер. 16: Машины и оборудо-

вание для лесозаготовок, лесосплава и добычи торфа: обзор. информ. – Минск, 1984. – Вып. II: Механизация и автоматизация сортировки древесины на лесных складах.

2. Матвейко, А. П. Технология лесозаготовительного производства / А. П. Матвейко. – Минск: Техноперспектива, 2006.

*Received 16.03.2012*